

Name _____

Chemicals of Life

At each of the following stations, you will take a piece of a living thing, or some product of a living thing, and identify at least one of the chemicals from which it is made.

Hypothesis: List at least 2 different compounds/chemicals you believe are found in living things _____, _____

Procedure:

Follow the directions below for each station carefully. Record your answers to the lettered questions in the Results section of your lab handout. Review what you learned by completing the Conclusion section as well.

Part A: Test for Water

1. Using a test tube holder, heat a piece of lettuce in a test tube over a hot plate.
 - a. What comes out of the lettuce and collects on the inside of the upper portion of the test tube?
 - b. What is the chemical formula for this liquid?
2. Continue heating the lettuce in the test tube over the hot plate.
 - c. What is the black substance that forms in the test tube as the lettuce heats?
 - d. What is the chemical symbol for the black deposit?

Part B: Test for Sugar

1. Fill a beaker about half full with water and heat to boiling on a hot plate
2. While the water is heating, pour about 2-cm (width of one finger) of Benedict's solution into the glucose water in test tube #1 and into the starch solution in test tube #2.
3. Stand the test tubes in the boiling water and watch for any change in color.

Note: A "brick" color indicates that sugar is present.

- a. What was the final color of test tube #1?
- b. What was the final color of test tube #2?
- c. Which test tube contains sugar?

Part C: Test for Starch

1. Add 2 drops of Lugol's solution to the glucose water in test tube #1 and to the starch solution in test tube #2.
2. Record any changes in color.

Note: A "blue-black" color indicates that starch is present.

- a. What was the final color of test tube #1?
 - b. What was the final color of test tube #2?
 - c. Which test tube contains starch?
3. Place a drop of iodine solution on the potato slice.
 - d. What color did the potato slice turn?
 - e. Does the potato contain starch?

Part D: Test for Fat

1. On a paper towel, dab a drop of oil, place a drop of water, and rub a piece of meat.
2. Let all three samples stand for about 5 minutes.

Note: A permanent spot which lets light through (translucent spot) indicates that fat is present.

- a. Which substance(s) left a permanent spot on the paper towel?
- b. Which substance (s) contain fat?

Part E: Test for Protein

1. Place a piece of hair in an aluminum sample holder and heat it on a hot plate. **DO NOT TOUCH THE HOT ALUMINUM SAMPLE HOLDER.** Remove the aluminum sample holder with a test tube holder.
 - a. Describe the smell and appearance produced by burning protein.
2. Place 20 drops of water into test tube #1 and 20 drops of powdered egg white solution in test tube #2.
3. **CAREFULLY** add 2 small droppers of Biuret reagent to each tube.

Note: A purple color indicates the presence of protein.

- b. What color did the test tube containing water change?
- c. What color did the test tube containing egg change?
- d. Which substance contains protein?

Results:

Part A

1. What comes out of the lettuce and collects on the inside of the upper portion of the test tube? _____
2. What is the chemical formula for this liquid? _____
3. What is the black substance that forms in the test tube as the lettuce heats? _____
4. What is the chemical symbol for the black deposit? _____

Part B

5. What was the final color of test tube #1? _____
6. What was the final color of test tube #2? _____
7. Which test tube contains sugar? _____

Part C

8. What was the final color of test tube #1? _____
9. What was the final color of test tube #2? _____
10. Which test tube contains starch? _____
11. What color did the potato slice turn? _____
12. Does the potato contain starch? _____

Part D

13. Which substance(s) left a permanent spot on the paper towel? _____
14. Which substance(s) contain fat? _____

Part E

15. Describe the smell and appearance produced by burning protein. _____
16. What color did the test tube containing water change? _____
17. What color did the test tube containing egg change? _____
18. Which substance (water or egg) contains protein? _____

Conclusion:

Based on what you learned from this lab, give an example of a food that contains

Water _____	Sugar _____	Starch _____
Fat _____	Protein _____	